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53. The physiological monitor of Claim 51, wherein said physiological parameter comprises heart rate.

54. The physiological monitor of Claim 51, wherein said physiological parameter comprises heart rate and blood oxygen saturation.

55. The physiological monitor of Claim 51, wherein said Kalman filter operates on a least means squares analysis.

56. The physiological monitor of Claim 51, wherein said processor determines said physiological parameter based upon expectation about the physiological parameter ranges and possible variation over time.

57. The physiological monitor of Claim 56, wherein said processor further comprises a selection module which evaluates each determination of a physiological parameter over time and averages said determinations over time based upon the confidence in the most recent determination of said physiological parameter.

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58. The physiological monitor of Claim 57, wherein said selection module comprises a smoothing filter with a sampling window, said sampling window responsive to the confidence level of incoming determinations of said physiological parameter.

59. The physiological monitor of Claim 58, wherein said processor further comprises a qualifying module which responds to determinations of said physiological parameter over time and expected values for said physiological parameter over time to qualify values for said physiological parameter for inclusion for input to said smoothing filter.

60. The physiological monitor of Claim 57, wherein said processor comprises a smoothing filter said smoothing filter clipping values which fall outside a particular threshold, said threshold based upon knowledge about said physiological parameter.

61. The physiological monitor of Claim 60, wherein said smoothing filter removes values which vary by a predetermined amount from the previous signal.

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62. A method of determining oxygen saturation, said method comprising the steps of: receiving an input of at least two measured intensity signals generated by the detection of at least two wavelengths of light transmitted through body tissues,